

WINTER HARD ON STORAGE BATTERY

Requires More Charging Because of Greater Use in Cold Months.

By H. CLIFFORD BROKAW, Technical Director West Side Y. M. C. A. Automobile School.

How does your battery bat? Is it a Babe Ruth that has no trouble in making home runs or is it down below the .300 mark? Does it fall down occasionally when you want to start the motor? Do lights go out or burn dim at times? Is the ignition intermittent? There are some things the driver should know about the care of the battery, especially in cold weather, if he is to have efficient service from it.

The storage battery in the automobile usually consists of three cells in which are two sets of plates, kept apart by wooden or rubber separators, one set of plates known as the positive group and the other as the negative. These plates are made in the form of a gridiron, the grids of the positive group being filled with peroxide of lead, which is a dark brown or reddish brown color; the grids of the negative plates are filled with spongy lead, which is dull gray.

The positive plates of each cell are grouped by connectors and the cell groups are likewise connected. The same is true of the negative plates. A electrolyte, composed usually of a 25 per cent solution of sulphuric acid and distilled water, fills the cell to the top of the plates. There is not a particle of electricity in the whole thing. It does not store electricity and the name "storage battery" is a misnomer. The battery produces electricity. When the positive and negative terminals are connected by a wire or otherwise chemical action is set up and electricity is one of the products of this chemical action. This, however, is only done when the battery is "charged."

Charging and Discharging.

To charge a battery an electric current is passed through, which creates a chemical reaction, changing the character of the plates. No electricity is produced in this process, but when the terminals are connected either to the starting motor, the ignition, or the lighting motor, the discharging process begins, that is, the chemical process is reversed, and in the chemical reaction of this reverse process electricity is produced. This process is continually going on while the battery is in use. In fact, a battery will run down or discharge from lack of use, and if it is not continuously being charged by the generator while the car is running it will soon run down so that there will not be enough current for the starting motor or for ignition and light.

This means that care must be taken to see that the generator is furnishing enough current to the battery to keep it charged. At this time of the year there is great danger that the battery will be starved. Many generators have an adjustment for winter driving and the owner should see that the adjustment is made. The battery should likewise be tested at least every two weeks in winter to see that it is up to the mark in efficiency. The best way to make the test is with a hydrometer. Full directions how to use it comes with each instrument. The electrolyte must be kept above the plates at all times. This is done by adding distilled water. In the summer time this should be done every week and in winter time at least every two weeks.

Heavier Demands in Winter.

In the winter time the starting motor makes much heavier demands upon the battery than in the summer, because it takes a little longer to start the engine due to the cold. More electricity is used for the lights and consumption of electricity is much heavier. At the same time the battery does not work so well in cold weather because heat is required for rapid chemical action. Sometimes a low condition of the battery will be indicated first by failure or weakness of the electric horn or the dimness of the lamps. Sometimes they will burn bright at first and then gradually grow dim. In such cases always test the battery. Then have the generator tested to find out whether it is giving a proper charge. If it is it indicates you should have the battery charged at a service station. Many owners have done this once every month or six weeks throughout the winter to make sure that it will function properly.

The battery should be taken apart and cleaned at least once a year, if it lasts that long. It will not last that long unless proper care is given to it and it is not subjected to heavy demands. Extra devices which consume current and undue use of the starter, burning the lights when the engine is not running for a long period and neglect of the wires and terminals so that there is a chance for current to leak out, all put a severe drain upon the battery. Likewise if the electrolyte is allowed to run low so that the plates are not covered, or if the battery is allowed to stand in a partially or completely discharged condition, one never can expect the battery to last much over a year. In motor practice with heavy cars the average life of the battery would be about one and a half years, and if one makes the battery last two years by care he is indeed fortunate.

Another thing to remember in winter

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Alfred Reeves Tells in Figures the Automobile's Great Success in 1920

By ALFRED REEVES, General Manager National Automobile Chamber of Commerce. AUTOMOBILE USE. Automobiles registered in United States approx. 5,200,000. Passenger cars registered in United States, 4,000,000. Motor trucks registered in United States, 900,000. Cars and trucks owned by farmers, 2,500,000. Per cent of registration in towns of 5,000 population or less, 55%. Per cent of 1920 output bought by agricultural districts, 33%. Passenger cars owned by doctors, 110,000. State owned cars and trucks, 30,123. Municipally owned cars and trucks, 10,314. Cars and trucks entering and leaving New York city daily, 154,725. Persons carried in and from New York daily by car and truck, 420,035. Trucks owned by farmers, 80,000. Labor saving value of truck to each farmer annually, \$150. Savings in transport charges in each farm annually through use of truck, \$340.

Amount paid by industry to railroads for freight shipments, \$100,000,000. PRODUCTION IN 1920. Cars and trucks produced, 2,541,000. Passenger cars produced, 1,900,000. Motor trucks produced, 641,000. Wholesale value of passenger cars produced, \$2,136,183,070. Wholesale value of passenger cars produced, \$1,703,437,213. Wholesale value of motor trucks produced, \$432,746,463. Average wholesale price of passenger cars produced, \$897. Average wholesale price of motor trucks produced, \$1,573. Passenger car manufacturers in production, 170. Motor truck manufacturers in production, 90. States in which factories are located, 32. Employees engaged in car and truck manufacture, 300,000. Automobile tires manufactured, 32,400,000. Increase in number of automobiles in 1919, 19%. AUTOMOBILE EXPORTS IN 1920. Value of motor vehicles and parts exported, including engine and chassis, \$338,000,000. Number of passenger automobiles exported, 153,000. Increase in number of passenger cars exported, 120%. Value of passenger cars exported, \$155,000,000. Number of motor trucks exported, 27,000. Increase in number of trucks exported, 60%. Value of motor trucks exported, \$45,000,000. Number of automobiles exported during year, 114. DEALERS AND GARAGES IN U. S. Passenger car dealers, 20,210. Motor truck dealers, 20,503. Gas stations, 28,258. Repair shops, 47,526.

time is that a battery that is fully charged will not freeze under severe conditions; but if it is discharged so that the sulphuric acid has entered the plates there is nothing left but distilled water, which will freeze at 32 degrees above zero. As a battery frozen in this way, it follows that the only safety lies in keeping the battery charged. Efficient battery operation need not be expected if the top is not kept clean and the metal parts covered with vaseline to prevent corrosion. They corrode very readily and in a short time may form a nice little insulation between the terminal and the wires. Dirt may also lodge in the vent holes and the filler openings. These should be kept open. Hydrogen gas passes off during the charging process, and this must have a vent. It is also well to remember that hydrogen gas is highly explosive, so that matches or torches should be kept away from the storage battery. The battery should be tightly fastened to the car. If allowed to rattle around the vibration will loosen the terminals in time, so that there will be trouble. It should be remembered also that the battery will not work properly if the wires are grounded or short circuited or are loose at the terminals. Many a battery has been ruined because there was a loose terminal at the switch or somewhere else about the car. Every battery maker issues a pamphlet giving explicit directions for the care of a battery. At least one of them gives a short course in electricity which is well worth reading. The owner who studies his battery and learns how to take care of it will not only save many dollars in renewal, but will have the satisfaction of knowing that it is not likely to fall down on him when he is out on tour.

Using a Wrench. A monkey wrench should never be drawn backward from the jaw, as this movement is likely to bend the bar. The wrench should always be pulled toward the jaws. FAVORS LOWER DUTY ON CARS. Foreign Trade Committee of N. A. C. C. Sees Benefits in Reciprocity. The foreign trade committee of the National Automobile Chamber of Commerce, meeting at New York last week, reaffirmed its position relative to a lowering of the United States duty from 45 per cent to 30 per cent to cover all automobiles and for a scientific tariff arrangement which will both prevent discrimination against American products shipped abroad and provide for mutual advantages in a greater exchange of commodities between foreign countries and the United States. This plan will be urged in presentation to the House Ways and Means Committee. Complaints from members were received that marine underwriters had increased in some cases 200 to 300 per cent rates on so-called frontier policies covering shipments from factory to foreign destination. The only explanation is that losses have been incurred particularly to damage by exceptionally long exposure to the weather during the freight congestion on the railroads in the last year or two. Manufacturers feel this risk is still eliminated, now that normal movement of freight may be expected. Many suggestions were made looking for relief from the increased insurance among them the possibility of cooperative or mutual insurance among automobile manufacturers, whose foreign shipments of cars and trucks last year totaled \$200,000,000. It was felt that the higher rates are particularly unfortunate at this time when foreign exchange and other conditions are tending to restrict rather than assist exports. J. Walter Drake (Hupp), chairman of the committee, presided at the meeting. Others in attendance were H. M. Tobias (Dodge), Jay Rathbun (White), L. J. Oiler (Studebaker), H. B. Phipps (Hudson), W. Harvey and J. H. Zimmerman (General Motors Export) and George F. Bauer, secretary.

LEGAL POINTS FOR AUTOMOBILE OWNER

Court Decides Rules of Road Are Not Binding on Pedestrians.

By Our Legal Correspondent.

In dealing with a suit for damages for injuries sustained in an automobile accident the Supreme Court of Washington recently was confronted with the argument that pedestrians, especially on country roads which are greatly used by automobiles, should follow the rules of the road governing vehicles and that their failure to do so should be regarded as negligence in fixing upon responsibility for accidents. It has always been taken for granted that the contrary was the rule, and this appears to be among the first cases in which the question has been presented for legal adjudication. In refusing to apply such a rule the court said: "It is a matter of common knowledge that a pedestrian on a highway or on a double track line of railway is far better able to look out for his own safety and protection by so travelling as to face all oncoming vehicles than he would be if keeping to the same side of the roadway as vehicular traffic, and being thus at all times obliged to keep watch to the rear. At any rate, in the absence of a clear statutory rule applying to pedestrians the question is one for the jury."

The case above referred to also emphasizes the legal rule that admissions made immediately after an automobile accident—as where one of the parties to the accident says that it was his fault—are not controlling when the question of liability for the accident comes before the court. Such admissions may be proved and should be taken into consideration by the jury, but the effect of the admissions is to be considered in connection with all the other evidence in the case.

In a recent case the California Court of Appeals decides that although the seller of a car upon the installment plan has frequently accepted payment of installments after they were due and in default he may at any time exercise his right to declare the contract forfeited if a subsequent payment is not promptly made as provided in the installment contract. Of course, where a defaulted payment is accepted this prevents a forfeiture as to that default, but the requirement of the contract for prompt payment of installments remains in effect as to future installments. The court further holds that if the seller gives due notice of his decision to forfeit the contract and retake the car it is then too late for the defaulting purchaser to tender payment.

In previous articles in this series attention has been called to the legal rule that where an employee is injured in an automobile accident the measure of compensation to which he is entitled under the workmen's compensation laws requires a consideration of tips received by him in the course of his work. In other words, such tips are to be taken as a part of his salary in measuring his earnings. In a recent New York case the claimant, in the language of the court, "who was receiving \$25 a week as compensation from his employer also received on an average \$5 per week as tips from the customers of the latter. The question is whether such tips should be taken into consideration in fixing the amount of compensation. He was a



LEE J. EASTMAN.

BETTER CONDITIONS SEEN BY EASTMAN

New York Automobile Head Tells of Survey Indicating Business Revival.

By LEE J. EASTMAN, President Packard Motor Car Company of New York.

After studying the general conditions which affect the buying of automobiles and other commodities, and making a careful analysis of business conditions in the metropolitan district, I am of the opinion that the day may not be far off when the demand for motor cars and trucks will exceed the supply, and that the metropolitan district is already on the up trend in such a movement. In reference to supply and demand, it is a well known fact that the buying power of a country, in the final analysis, is conditioned upon the prosperity of those who produce our agricultural products. When the agricultural classes produce large crops and sell them, they start a connected chain of buying and selling which affects every phase of business, and stimulates manufacturing and selling in every line. This year our country has produced some of the largest crops in history. A readjustment in prices is now starting a buying and selling process, by which this great amount of wealth will be turned into the channels of commerce. It is only a question of time until this influence will be felt in the automotive industry. Production of motor vehicles has been curtailed on account of the present market conditions. History has shown that very often demand increases much more rapidly than supply, and it is doubtful if production in the automotive industry will be able to get under

way quickly enough to keep step with the demand which will arise as soon as buying returns to normal. Several weeks ago this company decided to make a survey which would feel the pulse of business conditions in the metropolitan district. With the ever increasing importance of transportation in American business, we felt that conditions existing in the transportation business generally would reflect business conditions, and, if carefully watched, would serve as a good index on the up or down trend of business prosperity. About five weeks ago we made a careful survey of garages which rent space to over 1,500 vehicles engaged in general commercial hauling. Our first survey showed that about 50 per cent of these vehicles were idle, indicating that busi-

ness on which these trucks depended for work was slow.

By keeping in constant touch with these garages we have seen the percentage of idle trucks decrease until today only about 21 per cent are inactive. In an effort to check up on the accuracy of these figures we made another survey of several firms operating fleets of trucks in general trucking, contracting and department store delivery. This survey was made since the first of the year, and showed that about 14 per cent of the trucks operated by these concerns were idle. On the facts stated above, I believe the conclusion can be conservatively drawn that a gradual return to better conditions is not only assured but already under way.

truck driver. It is admitted that the employer had no knowledge of these gratuities. Pullman porters, waiters, taxicab drivers and others receiving tips from third parties are entitled to have such tips considered in determining the amount of their awards for injuries, providing the employers in such cases contemplate and intend that their employees shall receive such gratuities. In such cases the compensation paid by the employers is correspondingly less and they are therefore benefited by such gratuities. The case is different when an employee secretly receives gratuities from outside parties, not within the knowledge or contemplation of his employer. Secret compensation from third parties under the circumstances here disclosed is not consistent with his loyalty to his employer and is not commendable, and certainly should not be rewarded at the expense of the employee by increased compensation for injuries. There was a dissenting opinion in this case, and it is not unlikely that the question will be carried to a higher court.

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